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Effects of Yogic Practices with and without Varma Therapy on Selected Risk Factors among COPD Middle Aged Men

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Abstract: Chronic Obstructive Pulmonary Disease (COPD) is an umbrella name for a group of degenerative lung illnesses. The purpose of the study was to find out the effects of yogic practices with and without varma therapy on selected risk factors among COPD middle aged men. It was hypothesized that there would be significant differences due to yogic practices on selected physiological variables such as Breath Holding Time and Vital Capacity among COPD middle aged men. To facilitate the Random group experimental study in finding the effects of yogic practices on selected risk factors among COPD middle aged men, 120 middle-aged men were invited, 90 were screened and 40 were selected finally at random as subjects by using random group sampling design. Subjects were divided into two groups of 20 each, A, and B. It is hypothesized that there would be significant differences due to Yogic Practices on selected risk factors among middle-aged men affected with COPD than the control group. A preliminary test was conducted for Experimental group A, and control group B on the Breath Holding Time and Vital Capacity. Experimental Group A subjects were given Yogic Practices for 6 days a week for the period of 40 min in the first four weeks, 50 min in the second four weeks, and 60 min in the last four weeks of total 12 weeks duration. Control Group B was on active rest. After the experimental period, two groups were tested again on the same selected dependent variables. Analysis of covariance (ANCOVA) was used to find out the significant differences between the experimental group and the control group C. The test of significance was fixed at a 0.05 level of confidence. Yogic practices can significantly improved the health COPD patient. Thus, yogic practices helped to increase Breathing Holding Time and decrease Vital Capacity among middle-aged men affected with COPD.

Keywords: Yogic practices, Breath Holding Time, Self-confidence, Chronic Obstructive Pulmonary Disease

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Introduction

Chronic Obstructive Pulmonary Disease (COPD) is an umbrella name for a group of degenerative lung illnesses. It comprises of two major respiratory disorders, chronic bronchitis and emphysema,

both of which limit the patient's airways. In our nation, the most frequent risk factors for COPD are tobacco use and exposure to biomass fuel. Individuals with COPD are also more likely to have exacerbations, which can be induced by harmful environmental factors such as air pollution. Chest tightness, weariness, shortness of breath, wheezing, and recurrent respiratory infections are among the symptoms. COPD impairs the patient's health and productivity, as well as their surroundings and close relatives, lowering the quality of life for a large number of people.

The objective of the study was to find out whether there would be any significant difference in physiological variables-- Breath Holding Time and Vital Capacity among COPD middle aged men due to yogic practices. It was hypothesized that there would be significant differences due to yogic practices on selected physiological variables such as Breath Holding Time and Vital Capacity among COPD middle aged men. Inclusion criteria for this study were- (i) the study was delimited to Chennai City middle-aged men only; (ii) age of subjects ranged from 30 to 40 years only; (iii) the subjects were middle-aged men affected with COPD only; (iv) the dependent variable was restricted to the Breath Holding Time and Vital Capacity only; and (v) independent variables were Yoga only. Exclusion criteria for this study were- (i) the subject under medical treatment was be controlled for the study; (ii) the factors like environmental, climate conditions and socio-economic status were not to be taken into consideration; and (iii) certain factors like life style, body structure, personal habits and motivational factors were not to be taken into consideration for this study.

Materials and Methods

To facilitate the Random group experimental study in finding the effects of yogic practices on selected risk factors among COPD middle aged men, 120 middle-aged men were invited, 90 were screened and 40 were selected finally at random as subjects by using random group sampling design. Subjects would be divided into two groups of 20 each, A, and B. It is hypothesized that there would be significant differences due to Yogic Practices on selected risk factors among middle-aged men affected with COPD than the control group. A preliminary test was conducted for Experimental group A, and control group B on the Breath Holding Time and Vital Capacity. Experimental Group A subjects were given Yogic Practices for 6 days a week for the period of 40 min in the first four weeks, 50 min in the second four weeks, and 60 min in the last four weeks of total 12 weeks duration. Control Group B was on active rest. After the experimental period, two groups would be tested again on the same selected dependent variables. Analysis of covariance (ANCOVA) was used to find out the significant differences between the experimental group and the control group C. The test of significance would be fixed at a 0.05 level of confidence.

Results and Discussion

The data pertaining to the variable collected from the two groups before and after the training period were statistically analyzed by using Analysis of covariance (ANCOVA) to determine the significant difference and the hypothesis was tested at 0.05 level of confidence (Table 1).

As shown in Table 1 the obtained F value on the scores of the pre-test mean 0.95 was lesser than the required F value of 4.20 which proved that the random assignment of the subjects were successful and their scores in Breath Holding Time before the training were equal and there was no significant differences. The analysis of post-test means proved that the obtained F value 34.09 was greater than the required F value of 4.20 to be significant at 0.05 levels. It was accepted that the yogic practices significantly increased the Breath Holding Time. The adjusted post-test F value was greater than the recommended F value 105.31 which was greater than the required value of 4.20. This confirms that there was a significant difference on Breath Holding Time (increased) due to yogic practices treatment among asthmatic middle aged men (Fig. 1).

Table: 1 Computation of Analysis of covariance of Breath Holding Time

Test	Yogic Practices Group	Control Group	SV	SS	Df	MS	F
Pre-test Mean	45.47	39.94	B	39.93	1	39.93	**0.95**
			W	1192.67	28	42.60	
Post-test Mean	57.27	40.54	B	1856.53	1	1856.53	**34.09***
			W	1526.67	28	54.52	
Adjusted Post-Test mean	54.88	42.93	B	797.89	1	797.89	**105.31***
			W	204.67	27	7.58	

*Significant at 0.05 level of confidence; The table value required for significance at 0.05 with df 1 and 28 =4.20; and df 1 and 27 = 4.21

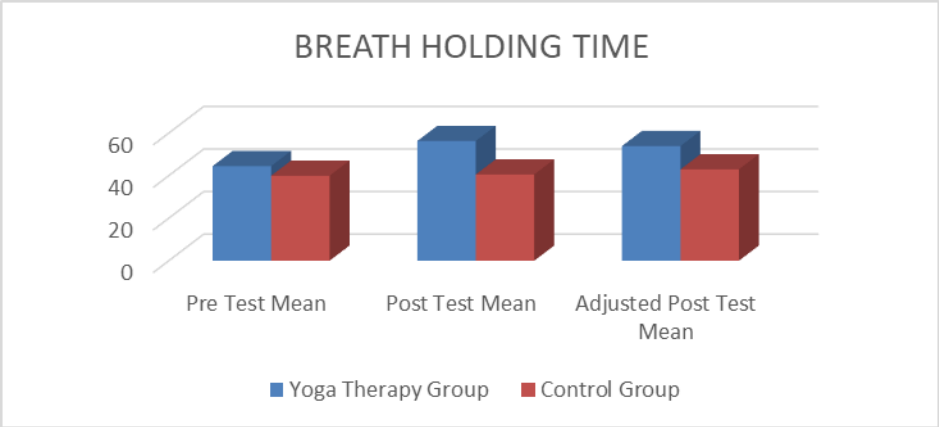


Fig. 1: Mean difference of pre- and post-score in Breath Holding Time.

Table 2: Computation of Analysis of covariance of Vital Capacity

Test	Yoga Therapy Group	Control Group	SV	SS	Df	MS	F
Pre-test Mean	2.95	2.88	B	0.04	1	0.04	**0.20**
			W	7.34	28	0.19	
Post-test Mean	3.22	2.98	B	0.59	1	0.59	**4.56***
			W	7.65	28	0.20	
Adjusted Post-test mean	3.20	3.01	B	0.34	1	0.34	**10.63***
			W	1.18	27	0.03	

*Significant; Table F-ratio at 0.05 level of confidence for 1 and 28 (df) =4.20; 1 and 27 (df) =4.21

The statistical analysis comparing the initial and final means of Vital capacity due to yoga practices on selected physiological variables among COPD middle aged men are presented in Table 2.

As shown in Table 2 the obtained F value on the scores of the pre-test mean 0.20 was lesser than the required F value of 4.20 which proved that the random assignment of the subjects were successful and their scores in Vital Capacity before the training were equal and there was no significant differences. The analysis of post-test means proved that the obtained F value 4.56 was greater than the required F value of 4.20 to be significant at 0.05 levels. Taking in to consideration of the pre-test and post-test means the adjusted post test means were done and the obtained F value of 10.63 was greater than the required F value of 4.21 hence it was accepted that the yoga practice significantly decreased the Vital

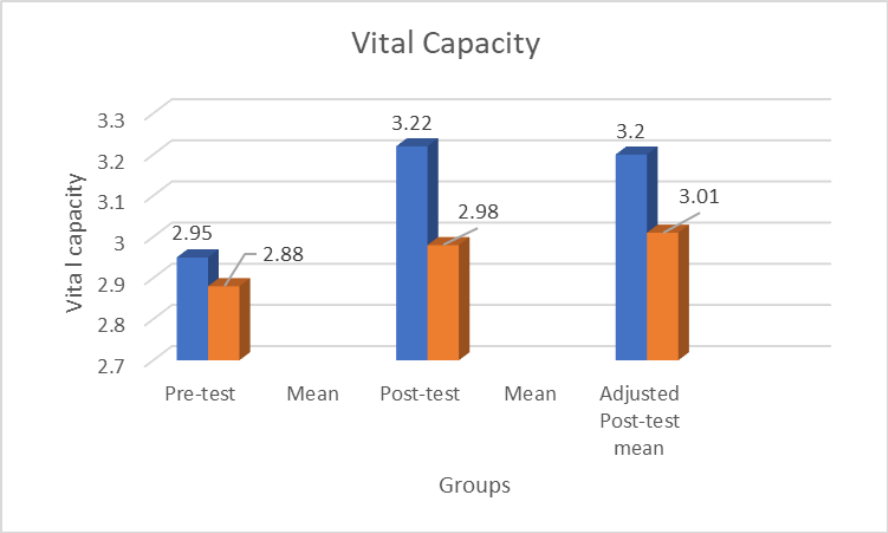


Fig. 2: Mean difference of pre- and post- score in Vital Capacity.

Capacity. The ordered adjusted means are presented in Figure 2.

Soni *et al.* (2012) conducted study on 60 diagnosed patients of mild (n=30) and moderate (n=30) COPD patients in the age group of 30-60 years, of either sex, having disease duration of more than one year. The patients were recruited from the medicine outpatient department (OPD) of Guru Teg Bahadur (GTB) hospital, Delhi. The diagnosis was based on three most common symptoms, namely, cough, sputum production and exertional dyspnoea. They observed significant decrease in weight and body mass index after yoga. The values of TLCO showed a statistically significant improvement after two months of yoga training in mild as well as moderate COPD. Behera (1998) studied the effect of yoga on COPD patients and showed that lung function parameters (forced vital capacity (FVC), forced expiratory volume in first second (FEV1) and peak expiratory flow rate (PEFR) improved after the practice of yoga. They have concluded that yoga, especially the pranayamic breathing exercises when used adjunctively with standard pharmacological treatment, can significantly improve TLCO in yoga with mild-to-moderate grades of COPD.

Sahasrabudhe *et al.* (2014) reported that there is a rising burden of chronic obstructive pulmonary disease (COPD) in India. Pulmonary rehabilitation (PR), is a universally recommended multidisciplinary therapeutic strategy for the management of COPD; however, it's needs are unmet. The diversity in the healthcare systems, availability of PR specialists and sociocultural multiformity requires contextualised and innovative PR models. Culturally sensitive elements, such as yoga, have some evidence of a positive impact in the management of COPD. Yoga and PR are based on similar principles with a holistic approach of involving physical activities, behaviour change techniques and psychological support to improve disease outcomes. Arguably the principles of PR and yoga are complementary but there are some important differences in the intensities of activities, exercise types and inclusion of mindfulness in components that must be considered. Components of PR enable aerobic capacity building, strengthening of muscles of the upper and lower extremities and building awareness towards disease management. Yoga, on the other hand, primarily can focus on core strengthening, breathing control, mindfulness and self-awareness. We discuss the potential of integrating the sociocultural appeal of yoga with PR delivered at international standards, and how an integrated approach may lead to optimal referral, uptake and completion. With the unmet need of PR globally, novel culturally appropriate PR models are the need of the hour to improve

acceptability, feasibility and adherence. Culturally acceptable adaptations can provide better opportunity for patients to internalise and adhere to the PR programmes. Yoga has therapeutic effects on various pathological conditions and there is a strong evidence of effectiveness of yoga in management of COPD. Yoga is a holistic approach with aims, components and outcome measures complementary to those of PR.

Conclusion

Yogic practices can significantly improved the health COPD patient. Thus, yogic practices helped to increased Breath holding time and decrease vital capacity among middle-aged men affected with COPD. Thus, Hypothesis was accepted at 0.05 level of confidence.

Ethical Statement

No animal or microbes have been used or sacrificed for this study, hence Ethical Approval not required.

Author Contributions

Each author has contributed equally to the study's planning, analysis, writing, and editing. All authors have read and agreed to the published version of the manuscript.

Conflict of Interest

The authors declare no conflicts of interest.

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